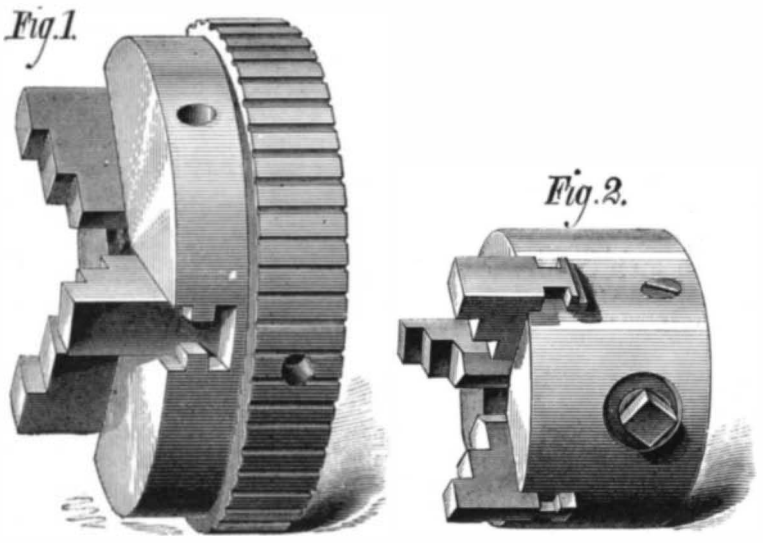
IMPROVED LATHE CHUCKS.

We illustrate herewith two improved lathe chucks of simple design, and constructed of strong and durable material. The chuck represented in Fig. 1 is made essentially similar to the new centering device which we illustrated last week. That is, the jaws move radially in one portion of the device, while recesses on their under sides engage with a scroll on the face of another and rear portion, so that when the latter is turned by a lever the jaws are caused to move toward or from the center. The jaws are of wrought iron or hardened steel, depending upon the size of the chuck, and the scroll is of forged wrought iron. Fig. 2 is an improved geared scroll chuck, in which the scroll is rotated by a pinion which engages with a gear on the rear face of the scroll plate.

The end of the pinion shaft is squared and protrudes, as shown, so as to be turned by a key. The pinion is of forged steel, the jaws of steel, and the remainder of wrought iron.

The workmanship of these chucks is accurate and good, their material of the best, and their price moderate. They are in all respects excellent and efficient devices, and may be commended to machinists generally. For further particulars address the manufacturer, Mr. A F. Cushman, Hartford, Conn.



CUSHMAN'S IMPROVED CHUCKS.

Snake Cannibalism.

A contributor to the SCIENTIFIC AMERICAN, in an article which appeared in the issue of March 16, 1878, descriptive of the habits of snakes, expressed the opinion that there were no *ophiophagi*, or snake-eating snakes, in this country.

We have received several communications in which the writers cite incidents coming under their observation, which seem to prove the contrary.

One correspondent, H., of Poughkeepsie, N. Y., writes: "While rambling through the woods near Dedham, Mass., one afternoon, some years ago, I suddenly came upon a large black snake in the act of swallowing a garter snake of about half its own size. He had succeeded in getting down nearly one half the length of his prey, head first, and was so completely gorged as to be incapable of moving. A few blows from a stout stick dispatched him, and the garter snake was withdrawn from his interior dead. The black snake measured 4 feet 8 inches in length."

Mr. F. N. Parker, of Newberry, S. C., also observes: "We have here a black and white snake we call the king snake, which will leave any other kind of food to eat a snake. There was one brought in town a few days ago with a much larger snake than itself hanging from its mouth half swallowed.

Locomotives.

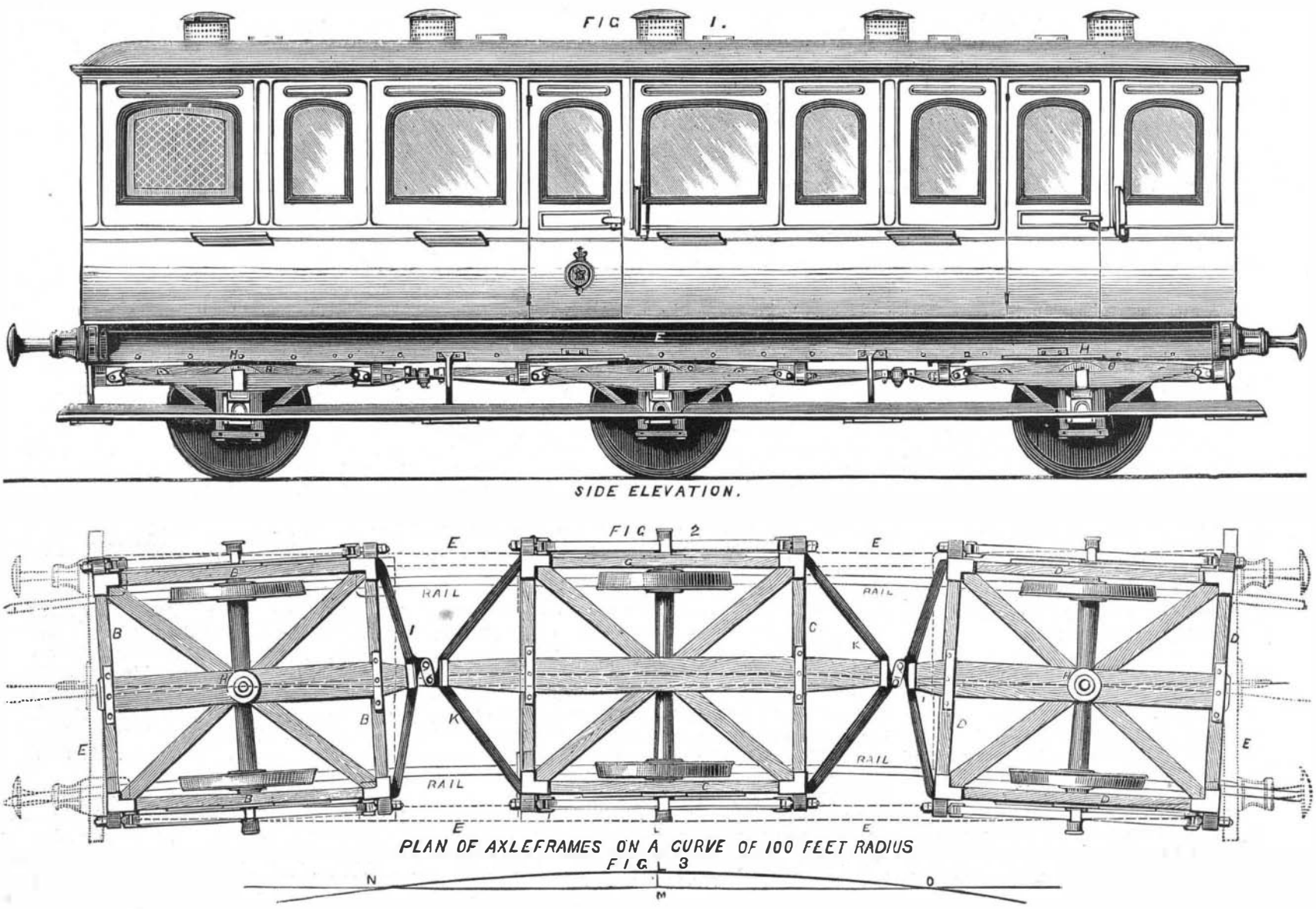
Mr. Price Williams lately gave some interesting data as to the power, performances, and consumption of coals of all the locomotives combined within the United Kingdom, and as an illustration of the extraordinary development of power, remarked that whereas originally it was only attempted to ascend the very slightest incline, the goods engines used on the Great Northern Railway had now sufficient power to just move up a gradient of 1 in 14; and these engines, when traveling at 30 miles an hour, developed 600 horse power. The number of locomotives in the United Kingdom were estimated by Mr. Williams at 12,994. They drew annually 205,600,000 tons weight of goods, 309,000,000 tons weight of carriages, and 530,000,000 passengers. The coal consumed he estimated at the enormous amount of 1,204,206 tons for passenger traffic, 1,924,000 tons for goods traffic, forming a total of 3,128,206 tons.

ENGLISH CAR TRUCKS AND AXLES.

Notwithstanding the successful introduction of many American improvements on European railroads, the problem of constructing long cars adapted to sharp curves has apparently been a baffling one to English railroad engineers.

Cars of the "palace" type have, within the past few years, been gradually growing in favor abroad, and their advantages have at length, after a hard struggle, become properly appreciated; but still the simple plan of supporting the cars upon two independent trucks or "bogies," having the requisite flexibility, has failed to find favor, principally because of the strong and heavy framing necessary to carry the weight of the middle portion of the car, and also because each end truck may, in one sense, be regarded as in itself a vehicle with parallel axles, but with a short wheel base, and therefore having no advantage over the short cars commonly used.

Our illustrations give a view of a royal saloon carriage on the Southwestern Railway, England, the plan of the axle frames showing the application of what is known as Cleminson's flexible wheel base system, a mode of construction invented by Mr. James Cleminson, of Westminster. This is an ingenious attempt to combine the advantages of long carriages with the facility of rounding curves possessed by short ones, and certainly has the appearance of possessing one very essential quality, that of lightness. It is well understood that the proportion of dead weight to carrying capacity is diminished by increasing the length of the cars, and Mr. Cleminson has endeavored to make the most of this by adhering to a central pair of wheels instead of adopting the heavier framing required in their absence. The London *Engineer*, from which we obtain the following particulars, speaks highly of this system, and mentions a number of roads on which it has been introduced. The means of passing round the sharpest curves with the axles always normal and radial thereto, whatever its radius, are secured by so attaching the axles to the carriages and to each other as to permit them to adapt themselves automatically and with truth to the varying conformations of a railroad. This is effected as follows: The axles, with their axle boxes, guards, and springs, H, are mounted in frames, B C D, Figs. 1 and 2, separate from the main under frame, E. The end frames, B and D, have central pivots around which they swivel freely, while the middle frame, C, is at liberty to slide transversely to the main under frame, E, through a range equal to the versed sine, L M, of an arc, N L O, the chord of which equals the wheel base, N M O (see Fig. 3), and finally the frames are connected to each other by the articulated radiating gear, I and K. The action of the combination is simply thus: When a vehicle enters a curve, the middle axle and frame, C, move transversely through the versed sine of the wheel base arc, and, in doing so, cause the end axles and frames, B and D, to swivel around their pivots, H, so that all the axles assume positions of radii of the curve. The *Engineer* states that for a very long carriage, say 80 feet, eight wheels would be employed, with a modification of the arrangement illustrated.



CLEMINSON'S FLEXIBLE WHEEL BASE SYSTEM.